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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. |
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| 09/220,970 | 12/23/98 | MILLS | R 9213-4 |

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| EXAMINER | |
|---|---|
| TADAYON, B | |
| **ART UNIT** | **PAPER NUMBER** |
| 2721 | 9 |

**DATE MAILED:** 03/14/00

**Please find below and/or attached an Office communication concerning this application or proceeding.**

**Commissioner of Patents and Trademarks**

# Office Action Summary

| Application No. | Applicant(s) |
|---|---|
| 09/220,970 | MILLS |
| **Examiner** | **Group Art Unit** |
| DR. D. TADAYON | 2721 |

#9

***—The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address—***

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication .
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

**Status**

☒ Responsive to communication(s) filed on AMEND. A (1-27-2000).

☐ This action is **FINAL.**

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle,* 1935 C.D. 1 1; 453 O.G. 213.

**Disposition of Claims**

☒ Claim(s) 51-322 is/are pending in the application.

Of the above claim(s)_____ is/are withdrawn from consideration.

☐ Claim(s)_____ is/are allowed.

☒ Claim(s) 51-322 is/are rejected.

☐ Claim(s)_____ is/are objected to.

☐ Claim(s)_____ are subject to restriction or election requirement.

**Application Papers**

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The proposed drawing correction, filed on_____ is ☐ approved ☐ disapproved.

☐ The drawing(s) filed on_____ is/are objected to by the Examiner.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. § 119 (a)-(d)**

☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 11 9(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been

☐ received.

☐ received in Application No. (Series Code/Serial Number)_____.

☐ received in this national stage application from the International Bureau (PCT Rule 1 7.2(a)).

*Certified copies not received:_____.

**Attachment(s)**

☐ Information Disclosure Statement(s), PTO-1449, Paper No(s)._____

☒ Notice of Reference(s) Cited, PTO-892

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Interview Summary, PTO-413

☐ Notice of Informal Patent Application, PTO-152

☐ Other_____

**Office Action Summary**

**Part III NON-FINAL ACTION**

1. This action is in response to amendment A received 1-27-2000. Claims 1-50 were canceled, and claims 51-322 were added. Examiner has relied on new grounds of rejection. Thus, this action is made non-final. The new grounds of rejection are described below in detail.

2. The specification is objected to because of the following informalities:

On page 13, the formula has a term in exponent in this form: (t-(SQRT(N)/a)). However, on line 30 of page 13, the term is expressed as SQRT(N/a), as the delay parameter. Note that the expression (SQRT(N/a)) is different from the expression in formula above (SQRT(N)/a)). The relationship here is not clear, and should be described, or otherwise, be corrected. The same concern should be addressed in other pages of specification. For example, this should be addressed for the following sections of specification:

Page 14 lines 17-18; page 14 lines 1-3; all of page 20; page 18 lines 26-29; all of page 19; page 34 lines 5 and 14; and all of page 47.

3. The following claims are objected to because of the informalities described above in item 2, regarding objection to

specification, for explanation for the terms (SQRT(N/a)) and (SQRT(N)/a)):

Claims 83, 94, 95, 98, 102, 106, 110, 138, 142, 148, 152, 193, 204, 205, 208, 212, 216, 220, 247, 248, 252, 258, and 262.

The relationship here is not clear, and should be described, or otherwise, be corrected.

## *Claim Rejections - 35 USC § 101*

4. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

5. Claims 51-322 are rejected under 35 U.S.C. 101 because the claimed invention lacks patentable utility. To overcome this rejection, it is suggested that applicant add an input and an output step (or means) to all the independent claims, to connect the invention to the physical world, such as for recognizing an input physical pattern.

## *Claim Rejections - 35 USC § 112*

6. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using

> it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

7. Claims 51-322 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The following questions or concerns should be addressed by applicant:

(I) Applicant has used a lot of well-known methods, concepts, physical formulations, and mathematical analysis. Although many of these concepts are valid individually, or are used conventionally in many other applications, the applicant has failed to teach the connection between these concepts in the current application, and has not explained to an ordinary skill in the art as to how one can implement the disclosure, without further experimentation and/ or substantial research, which puts a lot of burden on the ordinary skill in the art. The incomplete or vague specification does not satisfy the requirements for proper patent disclosure. To overcome this problem, the applicant should teach the connection between these concepts in the current application.

For example, the relationships between the following concepts are not clear in the specification of the current application: pattern recognition, Fourier space, different layers (Input, Association, String Ordering, Predominant Configuration Layer), Gaussian filter, probability expectation value, similarity between at least 2 filtered and unfiltered Fourier series, delay parameters, modulation factors, association ensemble, nested set of sequential subsets of random DNA fragments, groups of SFCs, memory ensembles, P element, association mechanism, basis of reasoning, the coupling, energy difference between final and initial nuclear states, interaction of ultrasound with Mossbauer gamma rays, central limit theorem, active association ensemble, Matrix Method of Analysis of Mills, series representing the nucleotides, transducer string, weighting factors, and Poissonian probability.

(II) It is not clear how exactly the Fourier series is obtained from the DNA sequences.

(III) It is not clear how adding the at least two of the Fourier components to form at least one Fourier series result in the recognition of the pattern.

(IV) In the Fourier analysis, the phase and high frequency components are not treated properly. This makes the analysis incomplete. Thus, the specification lacks the proper teaching.

**Claim Rejections - 35 USC § 102**

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless --
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 51-322 are rejected under 35 U.S.C. § 102(b) as being anticipated by Bates, Jr. (PN 4559602).

As described above, the specification of the application does not enable an ordinary skill in the art to understand, perform, or reproduce the invention, without an undue burden.

Since the teaching of the specification is incomplete and inadequate, the claims are not fully supported by the specification, and the examiner cannot fully understand the meaning and scope of the claims. In view of 112-1st rejection mentioned above, a meaningful and complete comparison between the claims and prior art cannot be done.

Thus, the examiner examines the claims based on his best understanding of the specification and claim language.

Examiner has rejected claims 51-322 based on the prior art, Bates, Jr. (PN 4559602). Note that Bates, Jr. teaches a system for analyzing a signal waveform, which includes a periodicity analyzer for detecting the time of occurrence of individual repetitions of a predetermined type within a periodic event in the signal waveform. The periodicity analyzer can provide, in response to this event being periodic, a periodicity signal corresponding to the period of the predetermined periodic event (see abstract). It can be used for biomedical signal analysis, speech processing, and the like (column 1 lines 21-28). It describes wavelet, modulation, spectrum analysis, and spectral pattern (column 5 lines 9-68). It includes amplitude modulation circuits (column 32 lines 8-23). It teaches spectral envelope, autocorrelation pattern, vector measurements, and statistical analysis (column 36 lines 56-68). It deals with harmonic ripples, interference, and periodicity sorting matrix (column 37 lines 20-42).

10. Applicant has mentioned some related prior art on pages 105-106 (the Reference Section, at the end of the specification). Examiner would like to review those references. Therefore,

examiner respectfully requests from applicant to supply all those references (listed on pages 105-106 of the specification).

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Poularikas et al teaches basic properties of Fourier transform.

Oppenheim et al teaches discrete-time Fourier series.

Nadler et al teaches pattern recognition, moment analysis, Fourier analysis, Hadamard Transform, K-L methods, eigenvalues, speech recognition, frequency domain, filter bank, and fuzzy features.

Young (volume 2) teaches 3D object recognition.

Gottfried teaches quantum mechanics (wave mechanics, orthogonality, completeness, eigenfunctions, Fourier theorem, energy eigenvalue, Hamiltonian, Schrodinger equation, complete set of functions, linear vector spaces, and wave functions).

Hecht teaches Fourier series applied in optical analysis, pulses, wave packets, wavetrain, photon packet, degree of coherence, grating, and diffraction.

Young et al (volume 1) teaches transform coding, frequency domain, Fourier analysis, DFT, FFT, feature analysis, Hilbert transform, Z-transform, Fourier slice theorem, filtered-

backprojection algorithms for 2D reconstruction, and transfer function of the filter.

Goodstein teaches statistical thermodynamics (box of perfect gas, counting the number of possible states at a given total energy, entropy, equilibrium, partition function, grand partition function, probability analysis, and sets of quantum numbers).

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dr. Bijan Tadayon whose telephone number is (703) 308-7595. The fax number is (703) 306-5487.

Dr. Bijan Tadayon

March 9, 2000

Dr. Bijan Tadayon

DR. BIJAN TADAYON
PRIMARY EXAMINER
GROUP 2721

Primary Examiner